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ORIGINAL ARTICLES.

OCULAR MANIFESTATIONS OF RHEUMATISM AND GOUT.

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It seems pertinent at the beginning of this paper to refer briefly to the etiology of rheumatism and gout.

For years investigators have been working on the theory that rheumatism is an infectious disease, and have been endeavoring to isolate the micro-organism. In the last few years attention has been definitely focused on a micrococcus first described by Triboulet in 1898, then by Wassermann in 1899, Paine and Poynton[1] in 1901, and Beaton and Walker[2] in 1902. The organism is a tiny micrococcus which Paine and Poynton class as a diplococcus while the German workers usually call it a streptococcus. Beaton and Walker found it arranged in pairs in certain cultures and in chains in others, and call it the "micrococcus rheumaticus." They say it resembles a streptococcus culturally, but their investigations lead them to believe that it is specifically different from the ordinary streptococcus. Poynton believes that these organisms may remain in the system, latent, for a long time, and under certain conditions become active and produce rheumatic fever; under other conditions chronic articular rheumatism; and under still other conditions, gout in its various forms. Rheumatic fever is now almost universally considered an infectious disease and the opinion is gaining ground that chronic articular and muscular rheumatism are also due to a micro-organism.

The aetiology of gout is still uncertain. The uric acid theory has most supporters, but unfortunately for this theory, gout cannot be produced experimentally by injecting uric acid into the blood or by preventing its elimination through the kidneys. Furthermore, experiment affords no evidence that uric acid possesses toxic properties, even when it is introduced into the blood in much larger amounts than have ever been found in gout. Poynton suggests that the inflammation of the synovial membranes may be due to the "micrococcus rheumaticus" and that the deposit of urate of sodium follows,—that this deposit is a symptom, and not a disease. The subject evidently needs further investigation.

While rheumatism and gout have a predilection for synovial membranes, they also produce disturbances in other tissues, including those of the eye.

The consensus of opinion seems to be that rheumatic fever affects the eye much less frequently than does gout or the chronic form of rheumatism. In fact, statistics show that acute inflammatory rheumatism does not often involve the ocular tissues; certain authors going so far as to say that it sometimes causes congestion but never inflammation,—a statement that very few oculists, in my opinion, would feel justified in endorsing. To chronic rheumatism and gout, however, a great many diseases of the eye have been attributed, sometimes justly and other times apparently without sufficient evidence. That all forms of these diseases do, at times, involve the eye and its adnexa, there can be no doubt. In this paper I desire to refer concisely to the different ocular tissues that are occasionally affected.

While most text books do not refer to rheumatism and gout as a cause of diseases of the *lids,* that they are a factor at times, seems established. Kalish[3] believes that recurring chalazia, recurring hordeola, when multiple and when the inflammation is out of all proportion to the gravity of the disease, and marginal blepharitis, when occurring in persons from 18 to 35 years of age, are due to rheumatism; marginal blepharitis due to strumous conditions occurring in children.

Wagenmann also calls attention to the recurring chalazia as at times being caused by gout. As to *conjunctivitis,* Hutchinson long ago called attention to hot and itching eyes, sometimes associated with episcleral congestion, as a frequent sign of masked gout. Burnett[4] says gout at times produces a tedious form of

conjunctivitis, causing a dry, burning feeling, with little mucous discharge, associated after a time with isolated infiltrations of the cornea and sometimes of the sclera. The attacks are influenced by the weather and are apt to recur.

Kalish[3] describes a form of circumscribed bulbar conjunctivitis which more frequently affects the nasal side but may attack the temporal side also; the palpebral conjunctiva never. It comes on suddenly and produces a watery discharge; never purulent or muco-purulent. It may be easily mistaken for episcleritis, but can be distinguished from it by its very prompt disappearance under anti-rheumatic treatment. He reports one case that had three attacks in six months. The third attacked the nasal side of both eyes and before any treatment was given, he developed an attack of rheumatism in both knees, when the conjunctivitis promptly subsided.

Another variety is restricted to the conjunctiva directly over the insertion of one of the recti muscles and simulates scleritis very closely. I have recently treated a case which seemed to belong to this class, in which the region over the insertion of the external rectus of the left eye was involved. There was no pain, photophobia, or lacrimation, and very little secretion. The eye simply felt uncomfortable. It had the apearance of a phlyctenular conjunctivitis, but there was no phlyctenule. Aspirin and the use of the yellow oxide of mercury ointment caused it to disappear in about five days.

The cause of *episcleritis* and *scleritis* is frequently rheumatism or gout. Nettleship says hyperaemia of the sclera, lasting only a few hours to a few days, at times precedes an attack of gout or rheumatism.

Tenonitis, C. S. Bull[5] and Noyes[6] say, is almost always due to rheumatism or gout. It is mild in type, and the symptoms are swelling and oedema of the upper lid, mostly confined to the retrotarsal fold, chemosis of the ocular conjunctiva, pain on the slightest movement of the eyeball, limitation of motility, slight exophthalmus and a serous exudation.

Inflammation of the ocular muscles is rare. Jackson in his Year Book for 1904 refers to Gleason's report of a case of idiopathic myositis. The patient was a healthy farmer who had previously suffered from rheumatism. For several months he had recurring attacks of inflammation in the right eye, suffering from diplopia, dull pain, exophthalmus, chemosis of the conjunctiva,

iritis, cloudy cornea due to exposure, and pain when he attempted to move the eye. A hard mass was felt beneath the upper lid extending into the orbit, and an exploratory incision revealed an enormously enlarged superior rectus muscle. The eye was enucleated on account of impending panophthalmitis. The other muscles were found to be normal. Two months later the patient returned with the other eye affected; the trouble having developed simultaneously with an attack of rheumatism. In spite of treatment with the salicylate of soda and the iodide of potassium, the vision was lost and this eye also was enucleated. All its muscles were increased in size and showed evidence of inflammation. Landolt[7] and Landesberg[8] refer to cases of inflammation of the ocular muscles from exposure to cold, which they believe to be rheumatic in character.

De Schweinitz refers to rheumatism and gout as among the causes of *muscular imbalance*. Rheumatism is considered to be one of the causes of *paralysis of the ocular muscles*. The external rectus is the muscle most frequently affected. It often comes on after exposure to cold, and Landolt thinks it may be due to inflammation of the muscle caused by the exposure. Landesberg reports a case of paralysis of almost all the muscles, accompanied by symptoms of inflammation of the orbital tissues, as a result of exposure to cold. Treatment effected a prompt cure. Landolt thinks when affections of this kind occur in young and healthy people the cause is likely to be rheumatism or syphilis; coming on after exposure to cold, accompanied by frontal and periorbital pain, and pain when the eyes are moved, the cause is likely to be rheumatism. These cases may get well promptly, be obstinate or incurable. *Paralysis* or *paresis* of *accommodation* is sometimes caused by articular rheumatism.

Although syphilis is the most frequent cause of *orbital periostitis, osteo-periostitis* and *cellulitis,* rheumatism is by all authors, considered responsible for some of the cases. Swanzy[9] says the chronic form of periostitis, without a tendency to suppurate, is usually rheumatic; the acute form usually syphilitic. *Osteoma* of the orbit is sometimes attributed to rheumatism, but C. S. Bull[10] thinks this doubtful.

Rheumatism and gout appear to be responsible for a certain number of cases of *acute retro-bulbar neuritis*. The symptoms are: neuralgia or dull pain on the side affected, pain in our about the orbit, pain when moving the eye or pressing it backward, impairment or complete loss of vision, sometimes no ophthalmo-

scopic symptoms, at other times a slight haziness of the edge of the disc and some constriction of the retinal vessels.

Priestly Smith [11] includes rheumatism and gout as some of the remote causes of *glaucoma*. Nettleship[12] thinks gout is more apt to cause it than rheumatism.

Most authors do not refer to rheumatism and gout as a cause of *cataract*. DeSchweinitz[13] says cataract has been noted in connection with gout. J. B. Lawford[14] refers to Bergmeister's report of four cases of posterior polar cataract in patients whose urine contained an excess of uric acid. The fact that the urine of these patients contained an excess of uric acid is, however, scarcely proof that it was the cause of the lens changes.

Statistics seem to show that about 30 per cent. of the cases of *iritis* are caused by rheumatism. What proportion are due to the acute and what to the chronic form is not known, as very few writers specify. Nettleship[15] believes that rheumatic fever produces congestion of the eye and photophobia, but not inflammation. Jackson[16] thinks rheumatic iritis rare. He refers to Yeld's analysis of 159 cases of primary iritis without finding one in which the evidence of rheumatism was conclusive. In 250 cases of rheumatic fever, Yeld did not find one case of iritis. Thomas McCrae reports 270 cases of acute articular rheumatism with one case of iritis. Brunson secured statistics from Hot Springs, Ark. physicians, and in 1500 cases of rheumatism, the kind not mentioned, there were 23 cases of iritis. Brailey and Stephenson[17] think acute as well as chronic rheumatism predispose to iritis and cyclitis and that they occur mostly between the ages of 20 and 40. They refer to the following groups of cases: (1) When the iritis alternates with the articular inflammation; (2) when the iritis recurs whenever the joints become swollen; (3) when the ciliary body is also involved; and (4) when the iritis develops after exposure to cold. All are apt to recur and the pain is usually out of all proportion to the severity of the inflammation. This class of cases usually recover with good vision.

Very few writers refer to gout as a cause of acute iritis. Chronic rheumatism and gout, especially inherited gout, share the honors with syphilis, sympathetic ophthalmia and extreme debility in producing the so-called *quiet* or *insidious* iritis, a disease which presents few of the classical signs of inflammation. One of the first symptoms is failure of vision which may be due to occlusion of the pupil or to involvement of the choroid and

ciliary body—a condition which I believe to be present in all cases, regardless of the cause.

While syphilis is admitted to be the most common cause of *cyclitis*, there can be no doubt that rheumatism and gout are responsible for some cases. It usually occurs in connection with iritis or choroiditis or both and is generally of a sub-acute or chronic type. In rare instances the ciliary body alone is involved. These cases are always obstinate. The majority get well, but some develop chronic glaucoma and end in blindness.

Hutchinson says inherited gout produces relapsing cyclitis without any other symptoms. Nettleship[15] thinks gout is more likely to cause insidious uveitis than rheumatism, and says that descendants of gouty parents are apt to have insidious forms of irido-cyclitis without having any other evidences of the disease. Swanzy[18] and Veasy[19] think rheumatism is the cause of most cases of insidious iritis and uveitis.

Text-books, as a rule, do not mention rheumatism and gout among the causes of *choroiditis*. Hill Griffith[20] includes rheumatism with syphilis and tuberculosis as causes of the disseminated variety. DeSchweinitz[21] says that " the insidious forms of plastic uveitis in gouty and rheumatic subjects sometimes start with an ill defined choroiditis, the first evidences of which are annoying obscurations of the visual field and various types of muscae without any discoverable vitreous changes. Vision normal. Later, sometimes months after, iritis, cyclitis and punctate keratitis develop."

Keratitis due to rheumatism or gout seems to be compartively rare and is usually secondary; occasionally primary. There is nothing distinctive about rheumatic keratitis,—a statement that I believe can be truthfully made about all rheumatic and gouty diseases of the eye. The keratitis may assume any form, although the substantia propria seems to be the most frequently involved. The diagnosis is often very difficult and must be made by exclusion, family history, history of previous attacks of rheumatism and from the fact that the pain, lacrimation and photophobia are greater than the severity of the lesion would indicate. Kalish[3] says that "striated keratitis, when of rheumatic origin, has a greyish tint, and very shortly afterward greyish parallel lines appear, bisected at right angles by similar parallel lines, producing a checkerboard appearance."

Leartus Connor[22], in order to get extensive clinical observations on this subject, wrote to a large number of oculists all over

the United States and received 127 replies. Sixty-seven said that they had never seen a case of keratitis that they could ascribe to rheumatism. Several had seen cases which they attributed to gout; 60 replied that they had seen one or more cases each; 6 reported one or more cases each due to acute articular rheumatism; 29 reported one or more cases each due to chronic rheumatism; and 28 had seen one or more cases each of secondary keratitis due to the chronic form. The outer layers of the cornea were observed to be involved by 9, the inner layers by 13, and the substantia propria by 45. Connor reports 2 cases of primary interstitial keratitis due to acute and 3 cases due to subacute articular rheumatism. All occurred during an attack and were relieved by anti-rheumatic treatment. In this connection, I desire to report the following case;

Miss N. C., age 14, consulted me on Sept. 1st, 1897, giving the following history: Has for some years been having more or less rheumatism in her right shoulder, which is much worse during changes of the weather. With this exception, her general health is fairly good. During the last four months has been having frequent attacks of pain in her right eye, accompanied by photophobia and lacrimation. The attacks generally preceded a change in the weather. By remaining in a darkened room for a day or two her symptoms would subside.

The present attack began one week ago and since then she has been having a constant dull pain, with decided photophobia, lacrimation, and some blurring of vision. The left eye has given her no trouble.

St. Pr. O.D.—V.= $^{17}/_{100}$. Slight ciliary injection, decided photophobia and lacrimation; pupil reacts to light; +. normal, By means of oblique illumination there was discovered a very slight diffuse haziness of the cornea which was located in the substantia propria.

Atropin was instilled and the pupil promptly dilated ad maximum. The ophthalmoscope with a 20 D. convex lens revealed no special haziness of the cornea, but instead of the pupillary reflex being uniformly red it was broken up by lattice-like transparent streaks, in the substantia propia, which had the appearance of being an engorgement of some of the lymph spaces, with some infiltration of some of the adjoining lamellae. The fundus was carefully examined but nothing abnormal was found. From the history of the case and by exclusion a diagnosis was made

of congestion of the substantia propria, probably due to rheumatism.

A protective bandage was applied and her physician informed of the diagnosis. He put her on anti-rheumatic treatment. The atropin and bandage and later smoked lenses were used until Sept. 8th, at which time all her symptoms had disappeared. Her vision at this time was $^{17}/_{15}$ w.+.75 D:S.⊃+.75 DC. ax. 90°. The left eye, under homatropin, accepted the same lens. These glasses were prescribed for constant use, with instructions to take the anti-rheumatic treatment as long as her physician thought advisable and to report to me promptly if she had any return of her eye symptoms.

She consulted me several times during the next year on account of muscular and accommodative asthenopia and reported that she had had no more attacks like the one just described.

She was not seen again until October 23rd, 1899, when she reported that for the last two days she had been having pain, lacrimation and photophobit in her right eye. Had been having pain in right shoulder for some time. An examination revealed the same condition of her cornea that was found on her first visit fundus normal. The same treatment promptly relieved her symptoms.

On Nov. 13th, 1900, she reported that she had gotten along quite comfortably until the last few days, when her right eye began to pain and water and was sensitive to light. Examination revealed the same condition as on previous occasions, with the exception that her vision, while being $^{17}/_{15}$ with glasses, was slightly hazy. The same treatment was given with the same results .

June 10th, 1902, she reported that she had been getting along very nicely until one week ago, when her right eye began hurting and her vision became blurred. Examination revealed no lacrimation or photophobia, no corneal trouble, but a decidedly hazy vitreous with a good-sized spot of chorio-retinitis in the upper temporal quadrant. Vision $^{19}/_{30}$. Salicylate of soda was prescribed. By June 17th, one week later, her vision had fallen to $^{6}/_{200}$. The salicylate of soda was discontinued and she was put on rapidly increasing doses of bichloride of mercury and potassium iodide. July 2nd, her vision was $^{19}/_{40}$ and July 22nd, $^{13}/_{15}$. August 26th vision $^{13}/_{15}$, but the eye, which had been quite comfortable, was giving her a great deal of pain. The vitreous was still somewhat hazy and in it were

found numerous sand-like floating exudates. The chorio-retinitis was subsiding. The mercury and pot. iodide were discontinued and the salicylate of soda resumed. Sept. 17th, the eye was very much more comfortable. Tr. of the chloride of iron and bichloride of mercury were substituted for the salicylate of soda. October 18th, vitreous fairly clear, chorio-retinitis passing into the atrophic stage. Vision $= {}^{13}/_{15}$. Iron discontinued but the bichloride of mercury was ordered continued for one month.

June 24th, 1903. Has had no pain in eye except before and during a rain storm, when it aches some. Aug. 26, 1903.—Has been having considerable pain. Cornea normal, vitreous clear, apparently no fresh inflammation in the choroid or retina. Vision with glasses $= {}^{17}/_{15}$. Prescribes the mixture of the four chlorides. June 13th, 1905.—Got along nicely until three weeks ago, when her right eye began to hurt and her vision became blurred. Vision $= {}^{13}/_{30}$. The ophthalmoscope revealed a normal cornea, hazy vitreous and a fresh spot of chorio-retinitis near the site of the original trouble. No rheumatism; general health good. Burnham's Soluble iodine and the bichloride of mercury were prescribed. June 24th.—Has had less pain in eye. Vision $= {}^{13}/_{20}$. The same treatment was continued. She did not report again in person, but one year later sent me word that her eye had gradually improved and that her vision was apparently normal. This seems to have been a case in which the cornea was primarily involved to the extent of a severe congestion or mild inflammation of the substantia propria, due to chronic articular rheumatism; the poison some years later attacking the choroid and retina without involving the cornea. My experience in this case as well as in the treatment of other rheumatic and gouty affections of the eye has convinced me of the absolute truthfulness of the statement that recurring attacks are very common.

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BACTERIOLOGICAL RESEARCHES ON POST-OPERATIVE INFECTIONS.

Duclos (Ann. d' oculistique T. CXXXXIV., page 409, December, 1905) reports the bacteriological investigation of nine cases of ocular infection following cataract operations, from which he draws the following conclusions: (1) The agents of post-operative infection are usually the pneumococcus (seven times) and the streptococcus (twice). (2) The infection is of exogenous origin, and always starts from the edges of the incision. (3) Clinically, suppuration due to the pneumococcus is characterized by a whitish exudation spreading towards the vitreous, while that caused by the streptococcus gives rise to an abundant conjunctival secretion and causes a diffuse infiltration of the cornea. (4) In the cases in which the urine was examined it was found to contain neither albumin nor sugar. Several of the patients were affected with chronic irritation of the conjunctiva or lids; almost all had lacrimation. The infections often occurred during the course of a coryza, and the most severe of them coincided with a relapse of a cold. The mucous membrane of the nose and throat contained the same micro-organisms as the pus from the operation wound. (5) Operative security depends partly on asepsis of the instruments, hands, dressings, etc., and partly on the condition of the mucous membranes.—The Ophthalmoscope (May).

MEDICAL SOCIETIES.

MEETING OF THE BRITISH MEDICAL ASSOCIATION AT TORONTO, 1906.

A DISCUSSION ON AFFECTIONS OF THE LACHRYMAL PASSAGES.

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EPIPHORA AND DACRYOCYSTITIS.

Probabaly no page of ophthalmological literature has been more thoroughly written over than that dealing with the treatment of obstruction of the lachrymal apparatus and dacryocystitis. I shall not attempt to review the literature of the subject, nor have I anything new to suggest, but in the beginning I should like to draw your attention to some points which are apt to be overlooked. The first of these points is (*a*) that a simple obstruction of the lachrymal passages does not produce constant epiphora, and second (*b*) constant epiphora may exist where the lachrymal canals are perfectly normal. So that the more important pathological conditions of the lachrymal passages would appear to divide themselves naturally into epiphora associated with stricture of the ducts and epiphora due to some other cause than obstruction of the outlet for the tears.

It is a well-known fact that under normal conditions the outlet for the tears is only called into play when there is excessive secretion. The normal secretion of tears merely serves to moisten the conjunctiva and allow for evaporation from the conjunctival surface. Excesive secretion of tears—apart from direct irritation of the lachrymal gland—is due to one of two causes: first, central or emotional; and, secondly, irritation of some portion of the mucous membrane supplied by the first division of the fifth nerve. In either of these cases, you may have constant epiphora, even though the channels for the outlet of the tears are perfectly normal. So it is evident that the natural drainage for the tears is unequal to the task when called upon to remove excessive secretion, and what might be called a natural epiphora is the result.

The fact that the removal of the lachrymal sac with complete closure of the nasal duct does not cause constant epiphora proves that under normal condition the tears are not removed by the lachrymal duct. Also where there is obstruction of the nasal duct the epiphora which accompanies it is caused more by the involvement of the conjunctiva in the inflammatory process than by the obstruction of the outlet.

The foregoing points have been referred to in order to emphasize the difference between the operative procedures at present in vogue, each of which has the same object in view, and yet they are diametrically opposed to each other in the method of attaining it. Obstruction of the nasal duct is almost invariably accompanied by inflammation of the sac, and as a rule, it is more for relief of the dacryocystitis than for cure of the structure that operative measures are resorted to.

The two operative methods referred to for the relief of the epiphora or chronic dacryocystitis are, first, opening and keeping open by dilatation the nasal duct to allow the discharge to pass down the natural passages, as opposed to, second, the complete removal of the lachrymal sac involving absolute and permanent closure of the natural outlet. Each of these methods, although so entirely different in the manner in which they propose to relieve the diseased condition, are serviceable. The question as to whether we should open up and keep open the natural passage, or permanently close it in order to achieve the same end is the problem. From the operator's standpoint the dilating and probing of the nasal duct appeals on account of its ease and simplicity, but to the patient to whom this method means weeks and months of painful probing, together with uncertainty as to cure, the view point is different.

If the operation for extirpation of the sac were as simple as it sounds, it appears to the writer it would be the ideal method, because the patient is subjected to only one operation, the cure is permanent, and only a slight scar is left. The difficulty in performing this operation successfully is due to the haemorrhage, which so obstructs the operator's view that he is liable to leave a portion of the sac behind, and so cause a fistula or a recurrence of the original trouble. All attempts to distend the sac with molten wax appear to have failed.

It is recommended by some writers that extirpation of the sac should only be undertaken in cases where treatment by probing has failed. But—other things being equal—where the operation

is undertaken as a preliminary to extraction of cataract, there appears to be no doubt that extirpation of the sac is the correct procedure without being preceded by probing. The saving of time, as well as the completeness of the cure, is an important feature in these cases. The argument against probing in such cases is that frequently where the passage has been made permanently free by the use of large probes, the nasal mucus is forced into the inner angle of the eye each time the patient blows his nose, and this could scarcely be called a desirable condition in an eye requiring an operation for cataract.

II.—S. D. Risley, A.M., M.D., Ph.D.,

PHILADELPHIA.

Any additional light shed upon the nature, aetiology, and treatment of the rebellious affections of the lachrymal drainage apparatus must always prove of interest to the experienced surgeon, for, notwithstanding the great relative frequency of tear-duct obstruction, and the vast amount of discussion in the past regarding its treatment, experience still forbids dogmatic statement as to the efficiency of any one method.

A review of the literature leads me to think that the importance of the anatomical anomalies in the structure of the bony nasal duct and the contiguous parts, as a predisposing cause for disease leading to obstruction of the tear duct in many individuals, has not generally been appreciated. As distortions in the anterior segment of the skull may lead to deformity in the shape or the orbits, and this in turn to anomalies in the form of the eyeballs and in the length and direction, the origin and attachment, of the extraocular muscles, and so produce the important group of conditions presented under the heading of errors of refraction and of muscular balance; so here, not alone may the nasal duct be modified in size, form, and direction, but the contiguous sinuses, accessory to the nose, are also distorted, and assume anomalous relations to each other and to surrounding structures, often encroaching upon the orbital walls, upon the environment of the lachrymal sac, and, in the case of the maxiliary antrum, upon the lumen of the nasal duct. By way of illustrating the practical importance of these anomalous relations of parts, I recall an instance where this encroachment upon the nasal duct was present. The surgeon had attempted "forcible dilatation" of the duct, and thrust the conical dilator through the projecting

wall of the antrum, which led to its speedy infection from a purulent lachrymal sac. Careful study revealed the fact that there was no actual obstruction of the duct, since washes flowed freely through it into the nose when the point of a cannula was carried beyond the false opening which had been made.

It is doubtless true that a typical normal drainage system may become the subject of inflammatory processes as a local manifestation of some general dyscrasia, or through local infection from the conjunctiva or nasal chamber; nevertheless, it is probably true that even in the presence of these cases for disease a tendency to its occurrence is greatly enhanced by the existing anomalous relations which have been mentioned above. Our rhinologic studies have shown the practical significance of these deformities, especially of the scroll bones of the nostrils and of the deviations of the septum or vomer. These anomalous conditions frequently cause marked narrowing of the nasal chamber, so that the opposing sides lie actually in contact, or approach so nearly, that congestion of the overlaying soft tissues brings them into contact. Under the ensuing pressure the circulation is impeded, and drainage from the accessory sinuses is prevented.

The semi-erectile tissues covering the inferior turbinals seem particularly liable to participation in this vicious circle of events, and the hypertrophied tissues which round out and enlarge their contour frequently close the exit for the tears into the retroturbinal space, the lachrymal drainage system being also accessory to the nasal chamber. It should be remembered in this connection that the tissues lining the nasal duct seem to possess in some measure erectile characteristics similar to the tissues covering the inferior turbinals with which they have a common vascular supply. A system of abundant veins surrounds the duct in its bony canal, which Dwight, quoting Henle, cites as an instance of what he calls compressible cavernous tissue, which gives support to the mucous walls—a fact of much significance from the point of view of the etiology of any obstruction located in the duct, and which should be considered in any scheme of treatment adopted for its relief.

It is probable that a normal duct is rarely or never patulous, but that tears escape into the nose from the lachrymal sac by capillary aided by gravity, and possibly, also, by muscular pressure upon the sac exerted in the act of winking. It is the opinion of some that a vacuum is caused in the sac by the alternate pressure relaxation of winking, and that the tears are sucked or drawn into it through the puncta and canaliculi from the lake

formed at the inner canthus. The drainage system, according to this view, is therefore a pump forcing the tears forward into the nose.

The onward course of the tears may be obstructed in any part of the apparatus. The puncta, one or both, may be closed entirely or partially as the result of abnormalities or by chronic disease of the conjunctiva or lid margins; the lumen of the canaliculi may at the same time be obliterated or diminished; the lachrymal sac may be diseased and its cavity closed by hypertrophy or by swelling of its surrounding tissue caused by a phlegmonous inflammation; or the peculiar tissue lining the bony nasal duct may become turgid by congestion common to it and the inferior turbinals, or be so changed by disease as to close its calibre, and so obstruct the escape of the tears from the lachrymal sac. Lastly, the form of the nasal duct may be such as to render it susceptible to temporary or persistent obstruction by even slight causes. It is probable that the majority of cases of lachrymal retention belong to this class.

When the cause of the retention lies in the puncta or canaliculi, gentle dilatation after cocainization is usually sufficient to effect a cure. If the sac is diseased it will usually be found necessary to slit the lower canaliculus in order that a more ready access to the sac and the nasal duct may be secured for the purpose of subsequent treatment. In relatively few cases it will be found necessary to slit the lower canaliculus in order that a more ready access to the sac and the nasal duct may be secured for the purpose of subsequent treatment. In relatively few cases it will be found that the inflammation of the sac dacryocystitis, or blenorrhoea exists without any marked stricture of the nasal duct. When obstruction exists in such cases it is apparently due to swelling or thickening of the sack itself, which readily closes the entrance of the duct. If the entrance to the duct is narrowed, the egress of the tears is prevented by the increased proportion of mucus or muco-purulent material which settles to the bottom of the sac formed either by the inflammation of the sac itself, or by that entering it from the conjunctiva. After thorough cleansing the sac from the muco-purulent collection, a few drops of a 4 per cent solution of cocaine, followed by adrenalin, will contract the swollen or oedematous tissue in a few minutes, so that fluids will readily pass into the nose from the cannula of the lachrymal syringe, without the necessity of probing the nasal duct, a procedure which should, whenever possible, be avoided.

When fluids can be made to pass into the nose freely, the inflammation of the sac and nasal duct will rapidly recover, and, I believe, more speedily and with better final results than when the already inflamed tissues are subjected to traumatism by probing.

In purulent affections the sac can readily be cleansed by solutions of peroxide of hydrogen and the inflamed surface treated by weak nitrate of silver solutions, sulphate of zinc, or, in chronic affections, by solutions of tannin and glycerine with iodine. These should not be allowed to remain in the cavity of the sac, however, but made to pass through it into the nose, and the surface subsequently washed with boracic acid or salt solutions. Many of these cases I often treat without ever passing a probe into the nasal duct.

In long-standing disease, however, the lining membrane of the nasal duct becomes thickened, and may quite close its lumen at one or more points in its course, usually at the bottom of the sac—that is, at the entrance into the duct—or the entire course of the duct is apparently closed by acute swelling, or by actual hypertrophy of the soft tissues, in which case probing becomes necessary. It should, however, be undertaken with caution, having in mind the peculiar anatomy of the tissue lining of the duct.

When we consider the variable and irregular form of the bony duct, it is obvious that the probe impinging upon a bony angle may very readily be made to penetrate the soft tissue, and so pass between it and the bony wall, causing profuse haemorrhage by injuring the blood vessels, the traumatism produced in this manner doing more harm than the original disease. I am convinced by my earlier experiences that in some cases which would have been readily curable by other and milder measures, more or less permanent and troublesome stricture of the duct had been caused by this accident. It can certainly, in most cases be avoided by filling the sac with cocaine solution and adrenalin chloride after cleansing, which as the tissues contract will pass into the duct, so that after the lapse of ten or fifteen minutes the probe can be cautiously passed through the duct to the floor of the nose. Too fine a probe should not be selected. No 3 or 4 of the Bowman's series are less likely to penetrate the mucous membrane than No. 1 or 2. The design in using the probe should not be to rend or tear a stricture, as in urethal surgery, but to compress the tissue between the probe and the bony walls of the canal, where it should be allowed to remain for fifteen or

twenty minutes. By this means the absorption of the thickened tissue can often be effected, much as the indurated edges of a leg ulcer are reduced by firm strapping. After withdrawing the probe the duct may then be readily treated with suitable washes or astringents with the aid of suitable lachrymal syringe.

Since adopting the conservative measures here suggested, results in the treatment of lachrymal affections have rendered a far more favorable prognosis justifiable both as to time required for treatment and in the final outcome. Neither in my public clinic or private consulting room are now witnessed the long line of patients waiting with Bowman's probes projecting from the ducts, as was formerly seen daily.

I have found much caution necessary in sliting the canaliculus as a preparatory step to subsequent treatment. The probe pointed knife of Weber is invariably employed, and care exercised not to carry the incision into the sac, since to do so is to destroy the admirable physiologic function of the part, that of a pump.

The drainage system should not be regarded as an open drain pipe, but as a delicate and most ingenious mechanism, the normal operation of which may be readily destroyed by bungling interference. The canaliculus should therefore be slit only to its junction with the common canal. The probe, or cannula of the lachrymal syringe, can then be passed into the sac and carried into a vertical position if necessary without the injury which would result from passing it through the uncut canaliculus. Great care is often necessary to avoid passing the probe-pointed knife through the lower floor of the canaliculus at its junction with the common canal. I have many times seen patients where this had occurred and a false passage made It can usually be prevented by dragging the lower lid strongly toward the temple and in this manner straightening the course of the duct. The results of this accident are extremely annoying and often difficult or impossible to remedy because of the resulting cicatrical tissue, which by contraction displaces or distorts the common canal, or may even close entirely the entrance to the sac, and should therefore be sedulously avoided. In cases of acute dacryocystitis, or in phlegmen of the sac with great swelling of the parts, the direction of the canaliculus towards its opening into the sac is displaced, so that the operation of slitting should be deferred until the swelling has subsided under cold compresses, or by opening the abscess through the skin and subsequent treatment through this incision. Without this precaution it is difficult or impossible to avoid making a false passage, which under the existing cir-

cumstances is likely to lead to a pus pocket and subsequent contraction and permanent displacement or closure of the opening into the sac. After the parts have regained their normal relation the canaliculus can then be slit safely and the final treatment of the sac and nasal duct conducted through it, the opening through the skin being permitted to close.

In cases of blenorrhoea of the sac, with a large nasal duct through which a relatively large probe can be passed, it will usually be found that the retention of tears is due to obstruction at the nasal end of the duct produced by disease of the contiguous soft tissues, or by some deformity of structure at this point or by collections of mucus at the bottom of the sac. The passage to the floor of the nose does not always end with the bony duct. In one case, in which No. 8 probe of the Bowman series passed without difficulty, and where washes flowed freely into the nostril, the patient nevertheless had constant retention of tears and mucus and a chronic conjunctivitis which demanded more or less constant treatment. The bony duct was a short one and patulous, but opened as a narrow slit under a broad fold of membrane at the back of a scroll-like inferior turbinate, which hugged closely the wall of a very narrow nostril. A rapid cure followed the surgical correction of the nasal conditions. In all cases of lachrymal retention, therefore, no study should be regarded as complete which does not include a careful inspection of the nostril.

In this connection, however, it should be borne in mind that lachrymal disease is rare when compared to the great frequency of affections of the nose. That the nasal disease does not more frequently cause obstruction to the outflow of the tears, I believe is explained by the protection afforded through the cleansing of the floor of the nose, by the constant and ready exit of the tears under normal conditions of the lachrymal duct. Given cases of abnormal anatomical structure, as, for example, the absence of the valve-like fold protecting the opening of the duct, or a slit-like exit which is readily closed, or some of the abnormal irregularities in the course of the duct itself, we have anatomical conditions for the escape of tears which render certain persons susceptible to closure by disease. On the other hand, it is also probable that obstruction to the free flow of the tears into the retroturbinate space, or the presence of a muco-purulent disease of the conjunctiva and lachrymal sac may be the *fons et origo* of disease in the region of the exit of the bony duct. Which is to

say that the disease of the turbinates and the floor of the nostrils may be secondary to the lachrymal affection.

In conclusion, I wish to urge the need for suitable instrumental aid in the treatment of these affections.

[A convenient dilator for the puncta and canaliculi, and a suitable lachrymal syringe both devised by the speaker and the probes employed were presented for inspection.]

III.—Samuel Theobald, M.D.,

BALTIMORE.

Dr. Theobald said he believed affections of the lachrymal apparatus to be consequent, in most instances, upon nasal diseases. He had had no experience in removal of the lachrymal sac, but in dealing with stenosis of the lachrymal duct relied upon thorough dilatation with large probes. The probing was generally begun with No. 5 of his series, and for a time was repeated every other day. When as large a probe as seemed called for had been passed the intervals were gradually increased. The active treatment—the frequent probings—comprised about six weeks; the whole treatment, including several probings at intervals of four to six weeks, as many months. A No. 16 probe was used in two-thirds of the cases. The average number of probings was twenty-four. Considerable force was permissible in passing the larger probes provided one was sure that the proper direction was being taken. During the whole course of the treatment a collyrium of bichloride of mercury (1 in 8,000) with the addition of sodium chloride (1 per cent.) was used by the patient three times daily, the sac being emptied by pressure before each instillation of the drops. Adrenalin was used in conjunction with cocaine, as it seemed appreciably to increase the anaesthesia. Nasal disease, if present, was given careful attention. It has been said that the use of large probes destroys the physiological action of the drainage apparatus. There is no warrant for this statement. No epiphora is complained of by patients whose lachrymal obstruction has been overcome by the passage even of the largest probes. The only objection that can be urged to the use of such probes is that after their employment the duct remains abnormally pervious, but this is of little moment. Exact statistics with reference to the results of the treatment of lachrymal strictures are difficult to secure, as the cases seldom remain under observation long enough to enable one to say that they

are permanently cured. It is within bounds, however, to say that of the cases in which the treatment with large probes is carried out as it always should be, from 80 to 90 per cent are completely and permanently cured. The unfavorable cases are those in which the lachrymal trouble is dependent upon serious and incurable nasal disease.

IV.—John E. Weeks, M.D.,

NEW YORK.

In taking part in the discussion of affections of the lachrymal passages it is my desire to call attention to the treatment of obstruction of these passages due to cicatrices or to thickening of the lining mucous membrane, with or without suppuration, by means of some appliance to ensure patency of their lumen. All who have studied cicatrical formation in the lachrymal passages will agree with me that the cicatrix or cicatrices form most frequently at the inner extremity of the canaliculi and at the neck of the lachrymal sac, the latter position being the more common. The cicatrix is usually the result of an ulcer that has affected the deeper part of the mucous membrane as well as the epithelium, and is usually annular. However, it may be the result of traumatism. An annular cicatrix occurring here, as an annular cicatrix occurring in the urethra or other narow canal, contracts to such an extent that the entire, or very nearly the entire, lumen is occluded. This form of obstruction is probably not more frequent than that due to a thickening of the mucous membrane from a slow inflammatory process, the thickening being accompanied in many, but not in all, cases by the formation of pus. My *confrères* will, I have no doubt, agree with me that the treatment of these conditions, is, as a rule, very tedious and may be very unsatisfactory. Medicinal means, so far as cicatrices are concerned, are of no value except in connection with surgical means, and then only for the purpose of allaying inflammation or irritation in those parts of the mucous membrane not involved in the cicatrix. In cases of obstruction from simple thickening of the mucous membrane, medicinal means may be sufficient to bring about recovery; particularly if, in addition to the medication, the passages are occasionally dilated by means of lachrymal probes. I shall not dwell on this form of treatment at this time. Suffice it to say that I resort to measures of this nature in all suitable cases. In cases in which mild measures fail or are not

advisable, the following procedures are usually resorted to: (1) The periodical dilation by means of probes; (2) maintaining the lumen of the canals by means of a cannula or style; (3) extirpation of the lachrymal sac. The first two are preceded by a cutting operation of some degree. My object in this discussion is to consider the second of these procedures in particular.

We are all aware that probing, preceded by Bowman's or Stilling's operation and accompanied by suitable medication, directed to the mucous membrane of the nose when necessary as well as to that of the lachrymal passages, will bring about a cure in a certain percentage of cases. In a few cases recovery takes place in a few weeks or months, but there are many cases in which recovery is delayed many months. Under such circumstances the patient is very apt to become negligent regarding treatment and recovery is greatly delayed. Some form of treatment that will bring about recovery in less time in these obstinate cases is desirable. If we do not resort to extirpation of the sac—in some cases it is not desirable and in some the patient will not submit to the operation—the only other alternative is to employ cannulae or styles. Having decided to employ some such appliance, we must first prepare the lachrymal passage for its insertion. This I prefer to do by slitting up the lower or upper canaliculus to the caruncle, directing the incision backward toward the globe, cutting in mucous membrane, using an Agnew long shank or a Stilling knife which is not too wide, and continuing the passage of the knife through the lachrymal duct to the nasal cavity. I then dilate the passage, using a Theobald probe for this purpose, the size of the probe to be determined by the size of the lachrymal canal.* Usually a 3mm. to 3.5 mm. probe is employed. The passage is then flushed with an antiseptic solution.

CANNULAE.

At present the writer does not employ cannulae. A sufficiently extended experience has demonstrated their uselessness. The objections are: (1) They do not carry off the tears nor do they drain the passages. (2) The lumen of the cannula soon becomes obstructed by thickened mucus or muco-pus, no matter where openings in the cannula may be placed. If the openings are at

***In a large number of measurements of the lachrymal canal made by the writer in skulls it was found that the diameter of the canal varied from 2.5 mm. to 7.5 mm.**

the end only and are large, obstruction takes place less readily, but it occurs too soon to render the cannulae of any service. If the openings are along the body of the cannula they are soon obstructed, either by the swollen mucous membrane or by granulation tissue, the granulation tissue pushing into and filling the lumen of the cannula if it is not disturbed for some days. (3) The cannula, particularly if perforated along its body, becomes a source of irritation, and actually tends to perpetuate the inflamed condition of the lachrymal passage. In the writers opinion, cannulae should never be used.

STYLES.

Material.—No material that will corrode or the surface of which will become rough from the effect of the secretions of the lachrymal passages, should be employed for making styles. Silver, lead, aluminum, copper, hard rubber, if used at all, should be used only temporarily, principally for the purpose of determining the size, and more particularly the shape, desired. In order to bring about a rapid recovery it is absolutely necessary that the surface of the style should be smooth and well polished, and remain so. The newly-forming epithelium dips into all interstices that may be present in a style, and is more or less disturbed when the style is moved. Gold is the only metal that meets the requirements. The style may be solid or it may be gold plated. If gold plated the plating should be on some flexible metal, preferably copper. The objection to gold and gold plated metals is the weight principally. This can be obviated by using hollow styles, but in this case the ends must be closed. Lead is the best material to employ for a temporary style—that is, for the purpose of obtaining the required length and shape. Its surface should be as smooth as possible.

Character of Styles to be Employed.—This depends on whether the surgeon desires to have the effect of wearing the style exerted in the upper part of the lachrymal passage only or throughout its entire length. In the former instance the style need not be more than 25 to 30 mm. in length; in the latter the style should be long enough to permit its lower end to rest on the floor of the nostril with the upper end the thickness of the style above the opening of the canaliculi into the lachrymal sac. The diameter of the style should depend somewhat on the size of the lachrymal duct, but it should not fit too snugly. If a probe of 3.5 mm. in diameter can be passed the style should be 2 to 2.5 mm. (No. 3 or

4 American gauge) in diameter. The upper extremity of the style should be bent almost, if not quite, at right angles with the shaft and should be long enough (5 to 7 mm.) to project outside the lachrymal sac. The shape of the extremity of the upper part is immaterial provided that it is smooth and is so adjusted that it does not rub against the eyeball when in position. The lower extremity should be rounded and smooth. The short upper arm may lie in the lower canaliculus when the style is in position.

Adjustment and Plan of Wearing the Style.—In subacute dacryocystitis a temporary style may be inserted immediately after having opened the canaliculi and having passed a probe. The temporary style may be made of smooth lead wire, No. 3 or 4 American gauge. It should be carefully adjusted, examined, and modified, if necessary, from day to day until the surgeon is satisfied with shape and adjustment. This will ordinarily require a week. The gold style can then be made exactly after the shape of the temporary style. It is the writer's custom to make the style himself of 18 K gold wire, having it burnished subsequently. (The temporary style should be removed every second day, and the lachrymal passages cleansed with an antiseptic solution, the style sterilized, lubricated, and replaced.) In the early part of the wearing of the gold style it should be removed every three to seven days if there is much secretion from the lachrymal passages, and the canal and style treated, as when the temporary style was worn. The patient soon learns to do this, and requires to see the surgeon but seldom.

COMPLICATIONS AND ACCIDENTS.

Dragging the Inner Canthus Downward.—This will occur to some extent if short styles are employed. Because of this the writer prefers to employ long styles, even if the obstruction to the passage is in the upper part only. This result of wearing a style is not of much importance. The position of the inner canthus restores itself very shortly after the style is removed.

Irritation to the Eyeball.—This can be avoided by proper adjustment of the style.

Displacement of the Style.—This accident may readily occur if the upper limb of the style is not sufficiently long or properly shaped. The upper end may disappear in the lachrymal sac and present many difficulties in its removal. This is a complication that may readily be avoided, but it is difficult for a beginner to realize how large a style may disappear in the lachrymal passages.

It is wise to start with a style the upper limb of which is too long rather than with one not long enough.

Concretions of inspissated secretion sometimes form on the style at exposed parts. If the style is cleansed every two or three days for a short period of time this will cease to annoy.

Absorption and Perforation of Horizontal Plate of Upper Maxilla.—Although this has been reported in the wearing of cannulae, I have never had any such experience in the use of styles.

Cutting through the Wall of the Canaliculus by the Weight of the Style.—This may occur if the style is too short and heavy, but the style should be so made that it will not press sufficiently heavy to cause such an accident. If this accident occur it is not of serious moment.

Formation of Granulation Tissue.—This sometimes, but rarely, occurs. Granulation tissue, if present, should be cut away or cauterized—that is, treated as granulation tissue occuring elsewhere.

RESULTS.

Permanent recovery, provided the nasal mucous membrane is in good condition, can be confidently expected at the end of from two to nine months if this form of treatment is carried out, and this without pain and with little discomfort to the patient. During the greater part of the time of the wearing of the style the lachrymal fluid gives very little trouble, as the excess finds its way to the nasal cavity along the sides of the style. When secretion has ceased and the period of cicatrical contraction (three to five months) has passed the style can be removed and the passages will remain patent. The patient should be seen a sufficient number of times after the style has been removed to enable the surgeon to convince himself that recovery is complete. Recurrences are not common; if threatened, reinsertion of the style can readily be accomplished. In almost all cases in which the lower canaliculus is slit up, whatever the subsequent treatment may be, the lachrymal fluid does not flow away from the conjunctival sac quite so readily as in the normal condition. Cases treated by wearing a style are no exception, but certainly do not possess this quality to any greater degree than do those treated by any other method.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

PRIESTLEY SMITH, F.R.C.S., President, in the Chair.

Thursday, December 13th, 1906.

THE PUPILLARY MEMBRANE.

Mr. E. Treacher Collins described the macroscopic and microscopic appearance of an adhesion of a persistent pupillary membrane to the cornea in the eye of a cat, and compared these with four other recorded cases of a similar nature. It was suggested that they might be divided into three classes with the following characteristics: (1) A cicatrix of a perforating ulcer of the cornea, with the pupillary membrane attached to the scar (Wintersteiner). (2) A cornea in all respects normal, except for a defect in the endothelium on its posterior surface at the seat of attachment of the pupillary membrane (Collins, Ballantyne). (3) A cornea in all respects normal, except for an absence of Descemet's membrane and its lining endothelium at the position where the substantia propria and pupillary membrane become blended (von Hippel). The case the subject of this communication came under the third heading. In Class 1 the cause of the adhesion was undoubtedly inflammatory in origin. In the cases belonging to the other two classes there was an absence of all signs of past or present inflammatory changes, and in some of the eyes there were other congenital malformations which could not be inflammatory in origin. The balance of evidence in them would seem to be strongly in favor of the abnormality being due to an arrest of development. In Class 2 the arrest occurred in the differentiation of the mesoblastic tissue, posterior to the hyaline layer of Descemet's membrane into endothelium and pupillary membrane. In Class 3 the arrest occurred in the formation of a partition of the hyaline layer and the differentiation of the mesoblastic tissue between the lens and surface epithelium into two parts.

SARCOMA OF THE CHOROID.

Messrs. L. V. Cargill and S. Mayou described a case of a flat sarcoma of the choroid.

The patient, a man aged 61, was first seen in August, 1904, when he complained of failure of sight of the left eye. At the

outer side of the macula was a patch looking like an area of choroido-retinitis. The retina had an oedematous appearance, and at the lower border of this area were some dark choroidal pigment spots, with other spots less pigmented; the patch was not definitely elevated, but there was a scotoma corresponding to it; the vision was $^{6}/_{18}$. The right eye was normal. In spite of warning the patient did not show himself for a year, and then the retina was partially detached, with much pigment along the border of the detachment. Vision was $^{6}/_{24}$. The use of Leber's transilluminator rendered the diagnosis of tumor certain. He was not again seen until March, 1906, when he had secondary glaucoma. Tension + 2 and vision P.L.

The eye was removed, and a funnel-shaped detachment of the retina was present. In the outer half of the globe there was a flat, darkly pigmented growth. In the region of the ora serrata it was raised and tended to spread in a ring-like manner. The optic nerve and sclera were not involved. The growth was strictly limited to the choroid, and was composed of spindle cells with no alveolar arrangements and a few large chromatophores. Anteriorly it showed well-marked signs of degeneration necrosis; there were also some small haemorrhages.

PERFORATING WOUND OF THE EYE.

Dr. Cecil Shaw (Belfast) read notes of a case of perforating wound of the eyeball, with complete destruction of the iris and retention of vision.

The patient was an engine driver, aged 37, who was removing the tyre of a bicycle, when the wrench, which he had inserted under the edge of the tyre, slipped and flew out, striking the right eye, and cutting the cornea from edge to edge a little below the center. The anterior chamber was filled with blood, and when after some days this cleared off, it was seen that the iris had completely disappeared, leaving the lens in place, but evidently injured at its lower edge, from which a few opacities spread through its lower third. These showed no tendency to increase. The wrench was a particularly sharp and rough-edged one, and probably caught the iris and tore it out.

All signs of irritation passed off in about a month, but some floating opacities remained in the vitreous. The man was able to return to his work in six weeks with vision of $^{6}/_{18}$ and $^{6}/_{12}$ partly in the injured eye.

REVIEWS.

THE PATHOLOGY OF THE EYE. BY J. HERBERT PARSONS. Volume III. General Pathology. Part I. New York: G. T. Putnam's Sons, 1906.

This volume of the excellent and complete work which we have previously had occasion to recommend so highly to our readers, is devoted to congenital abnormalities, myopia, hypermetropia, astigmatism, circulation and nutrition of the eye, the theory of immunity, normal intraocular pressure and glaucoma.

The author's own views are given in conjunction with all the views on these different subjects laid down in literature by other authors. It is, therefore, most interesting reading whatever chapter may be selected. Numerous illustrations add greatly to its usefulness. No one interested in the pathology of the eye can do without this splendid work.

REFRACTION OF THE EYE, ITS DIAGNOSIS AND THE CORRECTION OF ITS ERRORS WITH A CHAPTER ON THE USE OF PRISMS. BY A. STANFORD MORTON. 7th Edition. Philadelphia: P. Blakiston, Son & Co., 1906. Price $1.00 net.

Among the small compendiums on the refraction, Morton's has since its first appearance ever held a prominent part. That it has reached its seventh edition would prove this without saying. With the new chapter on prisms this edition maks a further stride forward.

PRÉCIS D'OPHTALMOLOGIE (Treatise on Ophthalmology). By DR. V. MORAX. With 339 figures in the text and 3 colored plates. Paris: Masson & Co., 120 Boulevard St. Germain, 1907.

A very practical treatise on the diseases and anomalies of the eye from a clinical teacher's standpoint. The author has reduced the mathematical features to a minimum and, as was to be expected from him, has given, perhaps, more than the usual space to the bacteriological and pathologico-anatomical side. The illustrations are in reality mostly original and differ from those in other text-books, in which we continually recognize old acquaintances only dressed up in a little different style.

The book is certain to be widely read and recurred to for reference.

THE MUSCLES OF THE EYE. By LUCIEN HOWE. In two volumes. Volume I. Anatomy and physiology, including instruments for testing and methods of measurement. Illustrated. G. P. Putnam's Sons. New York and London. 1907.

In previous numbers of this Journal our readers have had occasion to see a few chapters of this excellent and scholarly work and will undoubtedly be glad to be able to peruse it. The author's work differs from publications on the same subject in that he has not accepted any previous theories without verifying them as far as possible by his own studies. In order to do this he has had to invent new instruments or alter older ones, so as to be more exact and in this shows an ingenuity and mechanical faculty which is greatly to be admired. Having clearly demonstrated a fact to his mind, he formulates it concisely and in the simplest terms. Thus the book abounds with practical and useful details which must be studied to be appreciated at their full value.

The practicing oculist as well as the student should not fail to study this work, the second volume of which we await with great expectations.

TUMORS OF THE CEREBRUM, THEIR FOCAL DIAGNOSIS AND SURGICAL TREATMENT. By DRS. CH. K. MILLS, CH. H. FRAZIER, W. G. SPILLER, G. E. DE SCHWEINITZ AND TH. H. WEISENBURG. Edward Pennock. Philadelphia. 1906.

Like a former volume on tumors of the cerebellum, this little book contains 7 articles in which the tumors of the cerebrum are treated upon in their different aspects. All of these articles have been published before, yet it is very interesting and handy to have them thus closely together in one volume. The ophthalmic aspect of cerebral tumors is well taken care of by de Schweinitz. The book gives the most modern **résumé** on this interesting subject and will prove very valuable for reference.

THE PRACTITIONER'S MEDICAL DICTIONARY. By G. M. GOULD. With 388 illustrations. Flexible leather, gilt edges, rounded corners. Price $5.00. P. Blakiston, Son & Co. Philadelphia. 1907.

This dictionary, compiled by the well-known author, is meant especially for the medical practitioner and gives him the modern definition of all the essential medical words. It is therefore a most useful book for reference and study and the name of the author vouches for the correctness and trustworthiness of its contents. ALT.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. Shoemaker, M.D.,
St. Louis, Mo.

FOREIGN BODIES RETAINED WITHIN THE EYE.

Menacho (Archives de Oftalmologia, Junio, Julio, y Agosto, 1905) deals with the symptoms, diagnosis, prognosis, and treatment of wounds of the eye with a retained foreign body. The paper is based on 321 cases, of which 46 are from Menacho's own clinic; as a result of their examination he comes to the following conclusions:

The cases may be divided into three groups; the division cannot be an absolute one, because each case is unique in some respect.

1. *Recent Wound*: (a) When the injury is very severe, and the foreign body of large size remains in the eye, so that vision is definitely lost and there is reason to fear that the stump will not tolerate an artificial eye, enucleation should be performed at once. (b) When the projectile has not destroyed the eye. (a) If it is magnetic, it may be extracted by the electro-magnet from the anterior segment; if it lies in the posterior segment of the eye, the question of its removal will depend on the position. (b) When the foreign body is not magnetic, it may be extracted by an operation, if it lies in the anterior segment. If, on the other hand, it lies in the posterior segment, the chief point is the possibility or impossibility of accurate localization. When the surgeon is able to localize the position, he may attempt to extract any body that is accessible; if it lies very deeply, the operation will certainly mean the loss of the eye. Hence, in these cases Menacho advises the surgeon to wait until it be seen whether the eye will tolerate the intruder or not, but to be prepared to enucleate if the eye shows signs of intolerance. When the position of the foreign body cannot be estimated, he advises non-intervention so long as the eye remains quiet.

(2) *Wound Already Healed*: (a) If the body is magnetic, it should be removed by the electro-magnet, if it be easily accessible. If the depth at which it lies renders it difficult of attack, or

if it be encapsuled, no immediate operation should be undertaken. If it be in the lens, it should be extracted, unless the opacity has become stationary. (b) If the intruder be copper, it must be extracted at all cost. (c) Apart from these cases, the foreign body should be extracted when it is in the anterior segment, but if it lies deeply, expectant treatment is better.

(3) When toleration has been established, by which Menacho means that the foreign body has remained several months within the eye without setting up reaction, he advises non-intervention if the patient is an educated man, and is within the reach of skilled aid, but if, on the other hand, the patient is in such a position as to make him unable to seek a surgeon's skill at once on an emergency, it is better to remove the eye.

The only operation to safeguard against sympathetic ophthalmia is enucleation.—The Ophthalmoscope (August).

PAMPHLETS RECEIVED.

Dionin in Ophthalmic Practice. By J. Hinshelwood, M.D.

A Brief Résumé of the World's Recent Cancer Research. By W. S. Bainbridge, M.D.

Malignant and Non-Malignant Growths. By W. S. Bainbridge, M.D.

Was Percival Pott Really Entitled to the Honor of Having a Certain Spinal Disease Called by His Name? By A. J. Steele, M.D.

Thirty-Seventh Annual Report of the Manhattan Eye, Ear and Throat Hospital.

Facts *versus* Fancies Concerning Heterophoria. By F. C. Hotz, M.D.

A Case of Antipyrin Amaurosis Induced by One Hundred and Thirty Grains Taken in Forty-Eight Hours. By F. C. Hotz, M.D.

The Technique of Implanting Thiersch Epidermis Grafts in the Operation for Symblepharon. By F. C. Hotz, M.D.

Some Forms of Hereditary Cataract. By C. A. Wood, M.D.

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